BEST AVAILABLE COPY

1. (currently amended) A method for determining formation fluid pressure in earth formation surrounding a borehole, the borehole defining a borehole wall, the borehole wall covered with mud cake forming a mud cake seal, the method comprising:

providing a tool defining a probe and a variable-volume pretest cavity fluid-coupled to the probe;

pressing the probe into contact with the mud cake;

expanding the volume of the cavity to draw fluid from the formation in sufficient amount to produce a break in the mud cake seal during a draw-down period;

detecting an occurrence of a break in the mud cake seal by detecting an abrupt change in cavity pressure;

holding constant the volume of the cavity immediately after detecting the occurrence of the break in the mud cake seal, for a sufficient build-up period to establish pressure equilibrium between cavity fluid and formation fluid;

measuring pressure in the cavity; ~~and~~

setting formation fluid pressure equal to measured pressure; and

minimizing the volume of fluid drawn, thereby preventing excessive overshoot;

such that formation pressure is determined more quickly and the risk of the tool sticking in the borehole is reduced.

2. (currently amended) A method according to claim 1, wherein ~~detecting an occurrence of a break in the mud cake seal includes measuring cavity pressure and detecting an abrupt change associated with cavity pressure~~ minimizing the volume of fluid drawn includes using a low-volume flow line.

3. (currently amended) A method according to claim ~~2~~ 1, wherein detecting the abrupt change includes using a finite moving average (FMA) algorithm on a function of cavity pressure.

4. (previously entered) A method according to claim 3, wherein the function of cavity pressure includes cavity pressure.

PAGE 2/13 * RCVD AT 8/16/2006 12:28:46 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/19 * DNIS:2738300 * CSID:781 438 8115 * DURATION (mm-ss):04-26

5. (previously entered) A method according to claim 3, wherein the function of cavity pressure includes a first derivative of cavity pressure.

6. (previously entered) A method according to claim 3, wherein the function of cavity pressure includes a second derivative of cavity pressure.

7. (previously entered) A method according to claim 1, wherein detecting an occurrence of a break in the mud cake seal includes detecting a difference between a measured cavity pressure and a corresponding cavity pressure from a reference cavity pressure profile.

8. (previously entered) A method according to claim 7, wherein the reference cavity pressure profile is measured in a previous drawdown with the cavity isolated from the formation.

9. (original) A method according to claim 1, further comprising:

expanding the volume of the cavity during the draw-down period at a predetermined constant rate.

10. (original) A method according to claim 9, wherein the predetermined constant rate is within the range of 3-160cc/minute.

11. (original) A method according to claim 10, wherein the predetermined constant rate is approximately 5cc/minute.

BEST AVAILABLE COPY

PAGE 3/13 * RCVD AT 8/16/2006 12:28:46 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/19 * DNIS:2738300 * CSID:781 438 8115 * DURATION (mm-ss):04-26

12. (currently amended) A tool for determining formation fluid pressure in earth formation surrounding a borehole, the borehole defining a borehole wall, the borehole wall covered with mud cake forming a mud cake seal, the tool comprising:

an elongated body adapted for downhole operation;

a probe, extendable from the elongated body, the probe defining an inflow aperture and a low-volume flow line;

a pretest piston pump defining a variable-volume pretest cavity coupled to the inflow aperture via the low-volume flow line;

control means, including

a) means for expanding the volume of the pretest cavity in sufficient amount to produce a break in the mud cake seal,

b) means for detecting an occurrence of a break in the mud cake seal, ~~and~~

c) means for holding constant the volume of the cavity immediately after detecting the occurrence of the break in the mud cake seal, for a sufficient build-up period to establish pressure equilibrium between pretest cavity fluid and formation fluid; and

d) means for minimizing the volume of fluid drawn, thereby preventing excessive overshoot, such that formation pressure is determined more quickly and the risk of the tool sticking in the borehole is reduced.

and

a pressure sensor coupled to measure pressure in the pretest cavity.

13. (original) A tool according to claim 12, wherein the control means includes an electromechanically driven roller screw planetary system.

14. (original) A tool according to claim 13, wherein the control means further includes an electrically driven gearbox coupled to drive the roller screw planetary system.

15. (previously entered) A tool according to claim 12, wherein the control means includes downhole programmable control electronics coupled to control an electromagnetic assembly.

16. (currently amended) A tool according to claim 12, wherein the ~~tool includes~~ low-volume flow line is a constant-volume low-volume flow line.

PAGE 4/13 * RCVD AT 8/16/2006 12:28:46 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/19 * DNIS:2738300 * CSID:781 438 8115 * DURATION (mm-ss):04-26

17. (currently amended) A tool according to claim 16, wherein the constant-volume low-volume flow line ~~includes~~ is associated with a dedicated probe.

18. (currently amended) A tool according to claim 16, wherein the constant-volume low-volume flow line includes a flexible conduit.

19. (currently amended) A tool according to claim 16, wherein the constant-volume low-volume flow line has a volume in the range 20 - 120cc.

20. (original) A tool according to claim 12, wherein the probe is located between the pressure measuring means and the variable-volume pretest cavity.

21. (currently amended) A tool according to claim 12, further comprising a sample ~~line~~ riser coupled to the cavity, and an isolation valve located between the variable-volume pretest cavity and the sample ~~line~~ riser.

22. (original) A tool according to claim 12, further comprising an isolation valve located between the cavity and the formation fluid inflow aperture.

23. (previously entered) A tool according to claim 12, wherein said control means includes means for terminating expansion of the volume of the cavity on detecting an occurrence of a break in a mud cake seal.

BEST AVAILABLE COPY

PAGE 5/13 * RCVD AT 8/16/2006 12:28:46 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/19 * DNIS:2738300 * CSID:781 438 8115 * DURATION (mm-ss):04-26